THE

VETERINARY JOURNAL

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Editorials.

THE VETERINARY STUDENT, AND HIS VALUE TO THE COUNTRY.

At the present moment there are about twenty or thirty veterinary students serving their country in the British Army as combatant officers or men, some even being in infantry regiments where their knowledge of horsemanship is of no value and cannot be utilised; and it seems a great waste and want of economy that they should not be returned to their studies, and so emerge as officers in the Army Veterinary Corps, where they are so much needed. It is not sufficient that the third and fourth year students have been allowed to return, as the first and second year men should also be allowed to do the same. In this connection America has given us a good lead, for by their new regulations governing voluntary enlistment in the Enlisted Reserve Corps of the Medical Department any veterinary student is allowed, after enlistment, to carry on with his studies. It is, however, only done, as stated in the Order, with the idea that he shall be of more use to the State as a qualified man, and that as soon as he qualifies he places his services at the disposal of the Army. That every true man would always do when his country was in danger goes without saying, but they should always be given where they are of the greatest value, and no one will attempt to deny that as a qualified veterinary officer he is of more service to the State than when merely serving in the ranks. Our Council should read the Regulations (published in our columns) governing Voluntary American Enlistment, and an

attempt should be made on similar lines to permit the return to their studies of all legitimate veterinary students, registering them for immediate service if necessity arises.

Thirty or forty men, more or less, count for nothing in the combatant service; but thirty or forty fully-qualified men would mean all the difference in a department like the Army Veterinary Service between scarcity and sufficiency.

Most of the men thus serving are willing to return if permitted; and there can be no question that if permission was granted, and they qualified in due course, they would be a hundred times more useful and valuable to the country both now and in the future.

THE NECESSITY FOR ECONOMY IN REGARD TO HORSES AND MULES.

A NEW order has been recently published in Italy in regard to the horses, mules and donkeys of that country whereby these animals may not be slaughtered for food until they have been certified as being unable to be used either for work or for breeding purposes, and this verification must always be made on the word of a duly qualified veterinary inspector.

It is interesting to note this step taken by our Ally, as it shows that a necessity for economy in this direction exists, and it also again draws attention to the fact that the flesh of these animals is an important item of food. "Coming events cast their shadows before," and it makes one wonder whether or not the time will come when we, too, shall have to pass a similar law. The flesh of the horse and mule is a very good food, and a horse or mule sent to the butcher in France or Italy fetches a price undreamt of in England—often more than £40; frequently three or even four times as much as the animal would fetch in a sale; and judging from the valuable use made of it as a foodstuff by other European nations, it is a point worth consideration whether our insular prejudice does not cause us much economic wastage and monetary loss.

AWKWARD CLIENTS AND INCREASED FEES.

IN every veterinary practice there are certain individuals who may be classed as awkward clients, difficult to please or to satisfy. There are also thoughtless, vindictive, or directing clients and suspicious and densely ignorant individuals. Most of us have had experience of the fellow that always calls on us at meal times because he says he knows he will find us in; he is quite unconcerned as to whether his requests will take three minutes or thirty to fulfil; he is one degree more

considerate than the chap who rings us up or knocks loudly on our door at 4 a.m. to tell us that a patient we have been attending is dead. The lady who wants to talk for half-an-hour on canine ailments in general and her own pet's indisposition in particular has as true a sense of proportion as the naturalist who takes a musket to kill a butterfly. An ever probable thorn in the side is he who tries to work on an operator's fears by telling him if certain possible things happen he will hold him responsible and visit him with divers pains and penalties. The man who knows how things ought to be done and intends telling you with Tom Foy-like persistence is quite a common bird. The suspicious man who thinks you are doing one job in order to make two has probably spent his life chiefly with plumbers or slaters. The man who wants you to aid and abet all the mysteries of the dark ages and is willing to pay you quite well for introducing an idea or two of your own as a side line is also well-known. The real bad man is not very plentiful, but now and again a client by lies or perverseness tries to do you out of the just reward of your labours. The petty mind is occasionally found among the ladies, where the sixpenny doctor is quoted against you and your charges, or a reduced fee or none at all offered because a whippet's fractured leg has not set quite straight even when the original injury may have been a compound, comminuted one. At the present time, and indeed at all times, clients like these, if attended to, ought to be charged more than reasonable folk, and while not entirely believing in the aphorism, "swallow their insults and pocket their brass," yet the brass side of the question needs consideration. In all spheres of labour men never strove more than at the present time for decent pay and reasonable conditions of life and work. Perhaps there was never a better time to educate one's clientèle nor to secure adequate remuneration for services rendered. The prices of all live stock have increased enormously in value but as a set-off against this the number has decreased. A £16 pre-war cow now costs £60, an £80 cart horse £160 to £200. The Veterinary surgeon's fees in many cases remain the same, and insurance companies still offer a miserable 3s. 6d. or 4s. for the examination of such subjects. The cost of living has increased enormously and the veterinary surgeon is entitled to live, not merely to exist. The worst breach of professional etiquette that can happen to-day is perhaps to undercut a professional brother in charges or do work for tradesman's (and in many cases less than tradesman's) fees. Castrations at 5s., examinations for soundness at 7s. 6d., surgical operations at 2s. 6d. are all out of date. It is the man whose ideas never rise more than one degree above the poverty line that most tends to keep the profession down to-day.

G. M.

Original Communication.

VETERINARY SERVICE IN THE AMERICAN ARMY AND THE DUTIES OF VETERINARIANS DURING THE WAR PERIOD.

By CHARLES E. COTTON, Major, V.C., N.A.

The veterinary service of our army for many years was never organised. It consisted largely of civilian veterinarians employed by the Quartermaster Corps under contract. In 1900, the veterinarians attached to regiments of cavalry and field artillery were given the pay and allowances of second lieutenants, without privilege of promotion or retirement, and the Quartermaster Corps still continued to employ a considerable number of civilians for duty at corrals and depots. No enlisted men were provided, and the professional standard of veterinarians in many cases was low, with neither opportunity nor encouragement for improvement.

The American Veterinary Medical Association and members of the profession had made persistent efforts in Congress to secure adequate legislation for the army veterinary service, but without encouragement or success. Even the lessons of the Spanish War, which taught the need of an organised service, were soon forgotten, and it was not until June 3rd, 1916, that Congress passed an act giving veterinarians commissioned rank up to and including that of major, and providing the establishment of a veterinary corps in the medical department of the army.

When the present war broke out, there were only 58 veterinary officers in the army, and they were assigned to mounted regiments. There was no enlisted personnel, and no definite plan for organisation. The Secretary of War decided that the Overman Act of May 18th, 1917, furnished authority for the necessary organisation during the present war. Major-General Gorgas, surgeon-general of the army, immediately took steps to place the corps under proper organisation, and on an efficient basis of expansion. A number of the army veterinary officers and civilian veterinarians were called to Washington to devise a plan of procedure. The matter was referred to the general staff, and after an extended study a general order of the War Department, No. 130, dated October 4th, 1917, was issued, and on this order was based the present organisation. Authority was granted for one veterinary officer and sixteen enlisted men for each 400 public animals, thus placing the corps on a percentage basis. Special regulations, No. 70, for the government of the army veterinary service, and a guide for the use of veterinary officers, were written in the surgeon-general's

office. After some delay, on December 15th, 1917, the regulations were made a special order by the Secretary of War.

Lieutenant-Colonel J. J. Aitken, of the British army veterinary service, arrived in November, 1917, and remained in the office of the surgeon-general for five months. He was sent as a representative of the British veterinary service, and as an adviser, in order that we might secure the benefit of the experience of the British service and his personal training. He was of inestimable value in perfecting the details of the organisation. A set of blank forms were devised for routine reports and returns. A number of official and educational circulars have been published to veterinary officers, instructing them in the performance of their official duties, and in the treatment, control and eradication under service conditions of glanders, influenza, skin diseases, etc.

The functions of the veterinary corps are to prevent inefficiency in public animals, to render professional treatment to the sick and injured, to organise and operate veterinary hospitals, to evacuate sick and wounded animals from the firing line to the hospitals in the rear, to furnish veterinary supplies, to inspect meat and dairy products, to make recommendations on matters pertaining to sanitation and the control of preventable diseases among public animals, and to furnish and instruct personnel, both commissioned and enlisted, for carrying out these operations.

For the performance of these duties, the corps now consists of one lieutenant-colonel, 47 majors, 96 captains, 395 first lieutenants, and 966 second lieutenants, a total of 1,505 commissioned officers and 9,000 enlisted men. The authorised strength is 18,000 officers and men. In order to receive a commission, a veterinarian must be a graduate of a reputable veterinary college, and must pass an examination in veterinary subjects, as well as the physical examination required of all commissioned second lieutenants in the reserve corps. These veterinarians are left in civil life until their services are required, when they are called to active duty. This list became so large that it has been necessary to suspend examinations of civilians temporarily. Veterinary graduates, who have been enlisted as privates, or in the medical reserve corps, are given a chance to take the examination for commissions, and, if qualified, are assigned to duty as officers when a vacancy occurs. The standard of men being commisioned is improving all the time.

Every division of troops, before going overseas, has a complete veterinary personnel of 12 officers and 51 enlisted men, organised, equipped and supplied before sailing. Thus far, 44 completed divisional organisations have been formed in this country. The

division veterinarian, who is responsible for this service, is attached to the staff of the commanding general. He has, as assistant, a veterinary officer, trained in meat inspection, for the examination of all meat and dairy products used by the troops. Attached to each division is a mobile veterinary section, consisting of 21 men, equipped and trained for the removal of inefficient animals from the divisional units to hospitals. These mounted men will have stations near the front, where sick and injured animals will be collected, given the necessary first-aid treatment, and then removed to the hospitals on lines of communication. This service is of vital importance in preventing unnecessary suffering, conserving animals, and sustaining the efficiency of the fighting units.

At each auxiliary remount depot, operated by the Quartermaster Corps, are maintained 6 veterinary officers and 75 enlisted men. A remount depot is placed at each division camp, for the assembling of animals after purchase, and where they are kept until ready for issue to troops. Sick animals from the division camp, and from the auxiliary remount depot, are cared for in the veterinary hospital at the depot, which is organised and administered by the veterinary detachment. The veterinarian is also responsible for making proper recommendations for the improvement of the sanitary conditions surrounding the animals. A similar service is maintained at the animal embarkation depots.

Weekly telegraphic reports are received from division veterinarians, and the veterinarians of auxiliary remount depots, relative to the number of non-effective animals, the presence of communicable diseases, and the death rate. This report was instituted in December, 1917, and the veterinary corps takes pride in showing the improved condition and increased efficiency which are apparent from the following figures :—

	December 15, 1917.	June 1, 1918.
Total number of animals ..	213,803	269,779
Total non-effective	20,513	12,323
Percentage non-effective ..	9.05	4.56
Deaths	961	194
Percentage of deaths	·44	·071

The total number non-effective includes hospital cases and those in convalescent corrals.

Veterinary service is also supplied to all regiments of cavalry, artillery, and all other mounted troops scattered throughout the country, and to military posts having sufficient animals to warrant same.

Fifty veterinary officers, and an equivalent number of enlisted men,

are on duty with the subsistence division of the Quartermaster's department. This division buys all meats and meat food products issued to the army by the Quartermaster's department, both in this country and abroad, and the entire inspection is being handled by veterinary officers. This consists not only of the selection, inspection, covering, storage and shipping of refrigerated beef, but also the selecting of material and following it through the entire processes of canning, smoking and curing as regards canned meats, bacon and ham. This is one of the most important duties of the veterinary corps, and an enormous amount of work has been efficiently handled to date, and without complaint. Veterinary officers are also sent to Chicago for training as meat inspectors for each division and camp as required

An army veterinary laboratory has been established at Philadelphia, Pa., and is doing important work in investigating animal diseases encountered in the service, and in trying out various lines of treatment. An army veterinary officer trained in this work has also been sent to each of the department laboratories in the United States for the purpose of making blood tests for glanders, dourine and other diseases, and for general veterinary laboratory work.

At the ports of embarkation, a veterinary officer is in charge of sanitation of the transports used in shipping animals abroad. A transport veterinarian is also provided for each boat, who is practically in charge of the shipment.

Five general veterinary inspectors are assigned to different zones in the United States. Their duties are to inspect the division camps and auxiliary remount depots, instruct the veterinary personnel, and to improve the local veterinary conditions wherever possible. They also inspect the rest and feeding stations in stock yards of the railroads, and stables which may be used in the transportation and purchase of public animals, and direct the sanitation, cleaning and disinfection of same. These inspectors work under direct orders from the surgeon-general's office, and are free from the control of local commanders and quartermasters.

Veterinarians are on duty with the purchasing boards maintained by the Quartermaster Corps, and no animals are bought unless passed on and given the mallein test for glanders by these officers. They also supervise the sanitation, cleaning and disinfection of stables and stock yards, which are, or may be, used for the collection and transportation of public animals, or animals intended for presentation to purchasing boards. They are thus not only reducing the animal inefficiency in the army, but are advancing the livestock interests of the country at large.

Since the outbreak of the war, the supply branch of the surgeon-general's office has laboured with the selection, standardising, furnishing

and shipping of all veterinary supplies used by the army. These comprise medicines, dressings, bandages, instruments, hospital equipment, animal ambulances, and a multitude of articles required for the modern treatment of sick animals. The equipment and supplies, prior to October, were very meagre, and this work has had to begin at the bottom. The capacity of the manufacturers of this country has been strained to the limit in supplying many of these articles, but the supply system has now advanced to a point where all requirements are being fully and promptly met.

For the overseas service, there are to be provided, in addition to the veterinary service attached to each division, veterinary hospitals on the line of communications, and mobile hospitals, attached to army corps, for removing the sick and wounded animals. Some have gone and some are in training. The others will be formed as rapidly as possible. A veterinary training school has been organised at Camp Lee, Virginia, for the express purpose of receiving green men and training, equipping and instructing them, and organising them into these units. This school has a faculty of line officers for military instructors, and veterinarians for professional instruction, and aggregates about 1,800 officer and men at present. A modern veterinary hospital, in which the men can be trained to assist veterinary officers in practical work, has been approved from plans prepared in the surgeon-general's office and will, it is hoped, shortly be erected as an essential feature of this training school.

Other training facilities now afforded are in the veterinary section of the medical officer's training camp at Camp Greenleaf, Georgia, and Fort Riley, Kansas. At Camp Greenleaf, veterinary officers are given a two months' course in the duties of officers of the army. A class of 75 graduated in June. In the future, it is expected to graduate a class of 100 monthly. There are also about 250 veterinary enlisted men under training in this camp, and about 350 receiving instruction at Fort Riley. The latter place is especially desirable, since suitable men can be given a course in the school for horse-shoeing, cooking and baking, after which they are assigned to the organisations for overseas service. Horse-shoeing schools are maintained, in which a veterinary officer is the instructor. A veterinary officer, who is an expert horse-shoer and organiser, is going to the different camps as needed, and putting these schools on a better basis.

These observations indicate the activities of the veterinary corps to-day. It has a compact and comprehensive organisation, capable of expansion as required, a personnel which is steadily increasing in character and efficiency, and is rapidly rounding into an efficient unit.

The strenuous times now before our country require the accomplishment of many things which in peaceful days would not be required.

Carelessness in our every-day work might be overlooked in less important periods, but to-day, and, perhaps, for many days, we must exert all the forces which have hitherto been latent within us ; we must give every possible minute of our time, our thoughts and our energy, to the end that the agricultural industry of the country may be better served and strengthened, and to the greater and consequent end that the country will be materially assisted in winning the war with the least possible expenditure of lives and time. This is no time to think of self. There are many and great things to be done, and every one must do as much as lies within his power.

As veterinarians, you are the rear guard for the food supply of those who are taking upon themselves the blows of an enemy.

Having wide acquaintance, and making daily visits to sections perhaps far apart, you are in a position to do a vast amount of educational work in overcoming pessimism, sloth and unwise propaganda. You are in a position to encourage and further stimulate the patriotic effort of the nation's feeders to build up an inexhaustible supply of food. We should keep in mind that each of us is endowed with the power to think, and we should concentrate that power on thoughts that may be of benefit to the nation, of which we are but atoms, yet capable, when welded together, of immense power.

As veterinarians your duty is plain, and, if carried out, will result in benefits accruing not only to your Government but to yourself. Two items of primary importance lie before you, *i.e.* the production and conservation of meat ard milk-producing animals.

The various contagious and infectious diseases of livestock are a constant menace, and cause annually losses that are sufficient to feed our entire population. Many of these diseases are preventable by sanitation or vaccination. Your duty, in all cases of contagious and infectious diseases, lies in putting into use every measure known to science. If preventive treatment exists in the nature of serum or vaccines, it should be immediately applied, given unstintingly and with care. Reports of the existence of contagious diseases must be made known to those charged with their eradication and control, that repressive measures to prevent their spread may be instituted.

To permit a contagious disease to go unchecked is a crime against the nation. To neglect reporting to the authorities its presence so that its spread may be checked, is criminal.

Some of the contagious and infectious diseases are spread by the passage of animals through stock yards, and of the number disseminated in this way, shipping fever of horses, hæmorrhagic septicæmia, and hog cholera are the most important. These diseases can be

prevented, to a great extent, by the use of serums and adequate sanitation. Veterinarians should warn shippers of the danger of infection during transit through stock yards. If no state regulations are in force which require the cleaning and disinfection of stock cars and stock yards, your association can perform a patriotic duty by petitioning the legislature, as a body, that such needed laws and regulations should be promulgated and enforced. Veterinarians should report to the proper authorities outbreaks of shipping fever in centres where horses or mules are presented to army purchasing boards. We realise full well that traffic in livestock must continue, but we can see that it is safe-guarded against disease.

In sections where black leg prevails, induce your clients to vaccinate their young animals. If it is suggested the advice comes from selfish motives, vaccinate free of charge, and try to establish in the minds of owners that you are working for their interests.

Advise against the sale of immature animals. Point out to the owners that, by a little extra time and effort, sufficient fodder can be obtained to finish the profitable growth of the animal. Impress upon them that young animals grow into money. Far better to dispose of one old animal which has outlived its value, and which depreciates yearly, than to dispose of one that increases in value with its growth.

Sanitation is becoming more and more important with our knowledge of disease. Thousands of young pigs are lost every year from necrobacillosis. There are three forms of this disease in swine: necrotic stomatitis, snuffles and necrotic enteritis. The loss in flesh of beef cattle, and the loss in milk from dairy cattle affected with foot rot, are large items. The loss of lambs from foot rot is extensive. All these conditions are due to the necrotic organism, and may be prevented by sanitation.

Advocate disinfection. It devolves upon you to give demonstrations in the method of disinfection. It may take time, but keep in mind that thousands of people are giving time, money and life freely in the present struggle.

The reward for good and patriotic work will come with the knowledge and consciousness of well-doing.

When peace again rules the world, the devastated countries must come to the United States for seed stock.

Encourage and stimulate your clients to maintain and increase their herds and flocks. The future for the livestock industry of the United States is bright. We can well afford to be optimistic.

Belgium may come to America for breeding horses when the country again comes into its own. Holland, vastly depleted of cattle, may purchase Fresians in this country. The demand for meats by the

now warring nations will increase, until such time as those countries can be restocked and are self-providing. Hence you may do your people and the Allies a great service by being prepared for such an emergency. It will be many years before the supply will keep up with the demand. In conclusion, be optimistic above all things ; the mental attitude of a man affects every one with whom he comes in contact. An optimist admits there is more or less trouble in the world, but he faces it without fear, and this attitude is infectious to others

An American soldier in France is said to have penned the following appeal to the people of this country: "In this renaissance of our country's valour, we, who will edge the wedge of her assaults, make calm acceptance of its hazards. For us, the steel-swept trench, the stiffening cold, weariness, hardship, worse. For you for whom we go, millions safe at home, what for you ? We shall need food. We shall need care. We shall need clothes for our bodies and weapons foi our hands. FROM YOU, who are our resources and reliance, who are the heart and hope of that humanity for which we smite and strive, must come these things."

A COMBINED NEURECTOMY HOOK AND KNIFE.

By CAPT. A. SAVAGE

(Canadian Veterinary Hospital, B.E.F., France.)

I am forwarding the illustration of a neurectomy hook and knife combined, which may interest some of your readers.

It consists of the usual blunt painted hook on the shaft of which is a cutting edge.

The method of using this combination is almost self explanatory.

The operator exposes the nerve in the usual way. He then elevates the exposed portion by means of the hook and severs its proximal end by a stroke of the cutting edge. This leaves the distal and insensitive part to be dealt with at leisure.

I have found the instrument very convenient especially when the patient is in the standing position.

It is made by Messrs. Arnold and Sons, to whom I am indebted for the block.

COPPER SULPHATE AS A DISINFECTANT AND GERMICIDE.

By CAPTAIN WATSON, A.V.C.,
Officer-in-charge. Veterinary Bacteriological Laboratory, B.E.F. France.

A FEW Laboratory tests have been carried out for determining the germicidal action of copper sulphate solutions.

Pure Phenol (Carbolic Acid) was used as a standard control.

A vigorously growing race of micrococci, obtained from a gunshot wound, was used as the test germ.

TABLE I.—Inhibition Coefficient.
(— = No growth of the bacterium.
\+ = Growth „ „ „).

—	Strength of germicide (in nutrient broth).								
Germicide	1 : 100	1 : 200	1 : 400	1 : 500	1 : 1000	1 : 1500	1 : 2000	1 : 3000	Incubation at 37. C.
Copper Sulph.	—	—	—	—	—	—	+	+	7 days.
Phenol	—	—	—	+	+	+	+	+	„ „

TABLE II.—Lethal Coefficient.

—		Time of exposure, minutes.							Incubation.	
Germicide	Strength	2½	5	10	15	20	25	30	Time.	Temp.
Copper	1.0%	—	—	—	—	—	—	—	7 days	37. C.
Sulphate	0.5%	—	—	—	—	—	—	—	7 „	„ „
	0.2%	+	—	—	—	—	—	—	7 „	„ „
	0.1%	+	+	+	+	+	+	+	2 „	„ „
Phenol	1.5%	—	—	—	—	—	—	—	7 „	„ „
	1.25%	+	—	—	—	—	—	—	7 „	„ „
	1.0%	+	+	+	—	—	—	—	7 „	„ „
	0.5%	+	+	+	+	+	+	+	2 „	„ „

$$\text{Phenol Coefficient} \quad \frac{\frac{1.5}{0.5} + \frac{1.0}{0.2}}{2} = \frac{3 + 5}{2} = \frac{15}{2} = 7.5$$

The lowest percentage of Copper sulphate solution sufficient to prevent the growth and multiplication of the bacterium was found to be 1 : 1,500 ; and of Phenol 1 : 400. The *Inhibition* Coefficients were therefore :—

Copper sulphate	0·066
Phenol	0·25

The lowest percentage of Copper sulphate solution sufficient to kill the bacterium in 2½ minutes was 1 : 200, and in 30 minutes 1 : 500; and that of Phenol 2½ minutes 1 : 65; 30 minutes, 1 : 100.

The *Lethal* Coefficients were therefore :—

Copper sulphate ..	0·5	and	0·2
Phenol	1·5	„	1·0

The *Phenol Coefficient* of Copper sulphate worked out at 7·5. That is to say, the relative lethal action of Copper sulphate compared with Phenol is as 7·5 to 1; and, for example, a solution of Copper sulphate 1 : 150 would be equivalent in germicidal action (under laboratory conditions) to a solution of Carbolic acid 1 : 20.

IS THE CAT REALLY A DEFINITIVE HOST OF *DICROCOELIUM LANCEATUM?*

A Note on some Flukes from British Guiana and the Malay States.

By R. T. LEIPER, M.D., D.Sc.
University Reader in Helminthology, London School of Tropical Medicine.

In the "Annals and Magazine of Natural History" for July, 1918, Mr. H. A. Baylis describes some flukes taken by Mr. G. E. Bodkin from the bileducts of a cat in British Guiana. These flukes bear a very marked resemblance to *Dicrocoelium lanceatum*, and Mr. Baylis is lead to the conclusion that, after all, the older helminthologists may have been correct in reckoning the cat among the hosts of *Distomum lanceatum*, as this species was formerly named. The forms described from the cat differed from the typical worms as seen in sheep in certain minor points, viz., the relative position of the testes to each other, the smaller size of the cirrussac, and the slightly larger average size of the eggs. On account of these differences Mr. Bodkin's flukes are regarded as belonging to a well-marked variety of *Dicrocoelium lanceatum* rather than a distinct form. This new find is accordingly named *Dicrocoelium lanceatum var. symmetricum.* As the original consignment of specimens was collected from a single cat it was considered doubtful whether the parasite should be regarded as a "local" variety, or as a form peculiar to cats. The author concludes an interesting and suggestive paper by observing that—"An examination of examples of *Dicrocoelium lanceatum* from sheep or other herbivorous animals in the same locality would be of great interest from this point of view as well as a further investigation of the parasites of cats." Mr. Bodkin has recently enabled me to make a study of this interesting

form, having kindly forwarded several infested livers to the Museum of the London School of Tropical Medicine, through Dr. R. P. Cockin. The livers show gross pathological changes, similar to those which occur in sheep as a result of invasion of the bile ducts.

On opening the dilated ducts numerous flukes were found. These correspond in every respect with the description given by Mr. Baylis and in all the specimens the " abnormal " relation of the testes to one another is noticeable.

We conclude then that this type of worm is a frequent parasite of cats in British Guiana. On the other hand attention may be drawn to the fact that there are no well authenticated records of *Dicrocoelium lanceatum* in sheep or herbivorous animals in the New World. It is true that Leidy states that this species is common, with *Fasciola hepatica*, in the Western States of North America, but Stiles and other recent workers have failed to confirm this statement. It is similarly doubtful if the parasite is actually endemic in South America, for Dr. Kurt Wolffügel does not include this species in his monograph on " Los Zooparasitos de los Animales Domésticos en la Républica Argentina, " published in 1911, and rejects Ferrari's mention of it, in 1910, as incorrect. There seems therefore little probability that the heavy invasion in the cats of British Guiana is attributable to infection from herbivorous animals.

Dicrocoelium lanceatum is a common parasite of sheep in Egypt. During my Bilharzia Mission there in 1915, I collected a large number of specimens at the abattoir in Cairo. In none of these have I been able to find that variation in the position of the testes which forms the basis of the variety *symmetricum*.

Dicrocoelium symmetricum cannot be merely a " local " variety, however. In 1910 I received from Dr. Wellington a small consignment of flukes found by him in the bileducts of a domesticated cat in the Malay States. These flukes also resemble *Dicrocoelium lanceatum*, but like the flukes from British Guiana, they differ in the same striking characteristic, the testes instead of being tandem are in the same transverse plane. In this, as in other respects, they resemble a somewhat smaller *Dicrocoelium* from a wild cat, *Viverra zibetha* (a native of India and Malays), which was described as a new species, *Dicrocoelium concinnum* by Braun in 1901.

If then the *Dicrocoelium* in cats is to be treated merely as a variety of *Dicrocoelium lanceatum* of sheep, the name *concinnum* must have priority over *symmetricum*. Further difficulties would however then arise, for in South American birds no less than six species of *Dicrocoelium* oc ur—viz. *D. deflectens, D. delectens, D. voluptarium, D. lubens, D. reficiens* and *D. illiciens*. These are all identical in the

general arrangement of all their internal organs and differ only in the relative size of body, of oral and ventral suckers, of testes and ovary, and in the extension of the yolk glands. In all of them the testes are situated to each other as in the cat fluke, to which they bear a very close resemblance. They would therefore have to be treated as merely varieties of *D. lanceatum*, although recently they have been grouped into a distinct genus, ***Platynosomum*** by Looss. In the Far East the cattle are frequently found to have the pancreatic duct crammed with examples of two forms, named *pancreaticum* and *coelomaticum*. These parasites likewise closely resemble the sheep fluke *Dicrocoelium lanceatum*, but differ in certain minor points, particularly in the fact that the testes are not placed tandem but in pair. For these forms Looss created a special genus, *Eurytrema*, and, later, Railliet Henry and Joyeux added to it the species *Dicrocoelium concinnum*. Looss has, however, pointed out that this species has closer affinities to *Platynosomum*. If, then, *concinnum* is to be regarded as only a variety of *Dicrocoelium lanceatum*, so also must these other species of the genus *Eurytrema*. The same argument may be applied to *Mesocoelium*, *Lyperosomum*, *Brodenia*, and other genera of *Dicrocoelids*.

We thus arrive at the position that to accept the cat fluke as belonging to the same species as the sheep fluke would logically necessitate the complete abandonment of the modern principles of classification as applied to the whole group of genera which form a sub-family of *Dicrocoelidae*, and we should further have to decide not merely to replace the variety name *symmetricum*, by *concinnum*, but whether *concinnum* should not give way in turn to one of the above mentioned names of SouthAmerican avian flukes. On present knowledge I prefer to accept the view that (*a*) the sheep fluke does not use the cat as an alternative definitive host; (*b*) the flukes found by Mr. Bodkin and Dr. Wellington probably belong to a distinct species of an allied genus, viz., *Platynosomum*, and (*c*) the early record by V. Siebold, etc., of the occurrence of *Dicrocoelium lanceatum* in the cat remains still an isolated, doubtful, and unconfirmed statement.

A CASE OF COMBINED MATERNAL AND FŒTAL DYSTOSIA.

By P. WILSON, M.R.C.V.S.
(*Lanark.*)

During this foaling season I was requested to attend a mare that was in labour. The messenger said she had been foaling for some hours, and only one foot could be felt.

On examination one leg could be felt in the vagina, and it proved to be a fore leg. A further examination revealed the presence of the

head and another leg on the left side of the pelvis, but covered with what appeared to the touch to be a thick membrane.

My first impression was that they were enveloped in a fold of the placenta ; however, a more careful examination proved this not to be the case. The head and foot were just inside the vulva, and on following them forward, the fingers, when introduced as far as possible, suddenly passed round a fold in the uterine wall, and came into direct contact with the leg at the elbow, and the neck of the foal.

They were lying in what one can only describe as being like a third uterine horn, lying in a backward direction. There was no chance of manipulating the leg into proper position from the elbow ; and it was a problem how to effect it by any means. The mare was removed from the stable and placed on a steep incline, to raise the hind quarters. But it produced no change in the position of the fœtus.

The palm of the hand was then placed over the foot and the foot gently pushed in a forward direction. Several times it slipped from the palm, and returned to its former position. However, after several attempts it went the whole journey, and the leg became bent at the knee. On again manipulating at the bend or turn in the uterus, it was found that by pulling it back a little, the leg could be grasped round the pastern, and there was little difficulty in pulling it forward sufficiently to get the knee past the bend, or in straightening it out into the proper position in the vagina.

When this had been accomplished it was found that the head, by the same means, could be grasped by the lower jaw, and also brought round the bend into the vagina. Foaling was then completed with ease. The foal, however, was dead.

The mare was cleansed, the uterus washed out with corrosive sublimate solution, and two pessaries introduced into it.

It was then foundthat the pocket had disappeared, and the uterus resumed its normal shape. The mare made an uninterrupted recovery

So far as one can judge, the malformation would appear to have been caused in the following manner :—The foot of the foal would have got caught in a slight fold in the uterine wall, and become fixed there. With each contraction of the uterus, the fold became deeper owing to the pressure of the foot, and the foot got into a longer pocket, until the pocket became coextensive with the length of the leg, and the foot reached a position just inside the vulva. The head had followed this leg.

A LAME HORSE.

By J. H. PARKER, M.R.C.V.S.
(Faringdon.)

On Boxing-day last was called 10 miles to see a 5 years old Shire gelding, which a farmer had lent a neighbour to pull up some threshing

tackle from near the river Thames. The horse slipped up coming through a gap in the hedge. I found him down, but he could get up and stand on off hind, but unable to bear any weight on the near hind leg, and in great pain when standing. He used the sound leg as a pivot and whirled round like a dancing dervish. It required an acrobatic performance to keep out of his way and he would go down with a flop. He seemed easier when down. Three curved ladders were bound together and the horse roped firmly to them and he was gently pulled home, about 3 miles, by a team of 4 horses. We put him in slings and he immediately began to sweat and was evidently in agony, so we let him down again. His owner wanted to have him killed, but I said "We can do that when we can't do anything else, let him lie on a soft bed for a couple of days, and play the Asquithian policy." I saw him in two days, when he was much improved and standing fairly comfortably on the lame leg, which was considerably swollen at the true hock joint, the swelling being soft and feeling like a huge bog spavin. He made an uninterrupted recovery at the end of January and was put to work again. I saw him last week and there is no trace of any swelling or injury to the hock. I understood, as a student, that the capsular ligaments were not liable to sprain, but if this was not a sprain then I don't know what it was.

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CASE OF STAGGERS IN HORSE.

By M. Clarkson, M.R.C.V.S.
(*Satrow, Richmond, Yorks*).

On April 22nd of this year I was asked to go and see a horse belonging to a farmer which he reported to be seriously ill. I found the horse, a valuable Clydesdale 4-year old, in a semi-comatose condition, standing well forward in the stall and resting his head over the side of the stall. It was with difficulty we could get him either to back or turn round. I found the pulse to be full and slow, breathing and temperature normal, and the bowels acting regularly. I diagnosed the case as one of stomach staggers, although it was difficult to find a cause, unless it was due to the little quantity of fresh spring grass, coming up rich and green below the trough where he was watered twice a day. Perhaps he would be allowed to stay out 15 or 20 minutes each time, and would graze this. A dose of physic consisting of 1½ pints of linseed oil and 2 drams of calomel was given him, with difficulty. Next day, I went to see him, and found he had broken loose in his stall, turned round and was pressing against the stone cheek of the doorway so heavily that it was considerably out of the plumb and in great danger of letting the house end down. We got him back in the stable in a short time, so that we could open the door,

and got him outside. He staggered about, with very little control over his movements. It now became a question whether he should be left in some building and chance him falling and damaging himself or someone, or turning him out, although the weather was cold, and letting him take his chance that way. As the farmer had no suitable loose box, I decided on the latter, and as the oil had not operated, I decided to give him a 6-dram physic ball. He would take just a little mash, and eat a few bites of hay. Next day, I found he had staggered over a wall, out of the field he was placed in, and the farmer had found him across the river 200 yards away, having dropped over an embankment ten or twelve feet high. With great difficulty he was got back, as he crossed and recrossed the river five or six times before he could finally be got out of it (where the embankment was low), being unconscious as to where he was or what he was doing. We then drove a stake into the ground, tied a long rope to it, tethered him, and rugged him up well with woollen rug covered with oilskin cart cover. For medicine he had Pulv. nux. vom., ½ dram; Gent., 2 drams; Fenygrec, 2 drams; Sod. bicarb, ½ oz. Misce. for one powder, mix with treacle to a paste and smear on tongue. One to be given twice a day, Next day, no improvement; coma getting more profound. Wandered continually round the circle permitted by the rope (with his head hanging down), too unconscious to take food, Next day I tried to drench him with milk and eggs, but he was too dazed to swallow. I now commenced enemas of milk and eggs—three times a day. These were continued 5 or 6 days, and were the only nourishment he had He would not eat or drink anything. At the end of that period a little improvement took place. He would look up when anyone approached him. He began to drink a few mouthfuls of gruel and eat a few bites of hay. We now put him in an outhouse at night, as the weather was cold. For two or three days he continued to drink and eat a very little in a half dazed condition.

About the twelfth day from the commencement, when the owner went in the morning to see him, he whinnied as he approached the door, and on opening it he was surprised to find that the dazed condition had quite passed away, the horse being quite conscious and ravenous for food. He was carefully dieted for a few days and made an uneventful recovery. He had got very low in condition during his illness, but soon regained flesh.

I think this case may be of interest on account of the coma passing off so suddenly and completely as it did. The cause of the illness was also obscure unless it had been the fresh spring grass referred to, and there appeared to be nothing else to account for it.

RETENTION OF URINE AS A CAUSE OF COLIC IN YOUNG FOALS.

By P. WILSON, M.R.C.V.S.
(*Lanark.*)

In my experience it is fairly common to have colic in foals from eight to twenty-four hours after birth, in which the bowels have been acting quite regularly, and the appetite has been normal, but where they have been carefully watched, the passing of urine has not been noticed.

At first the foal appears to be getting rather dull, it then begins to kick a little and walk round the box more than usual, stretches itself as though about to urinate, but does not.

After some time, it lies down, but not for long, rises again and assumes the position for micturition, without any result. It may suck a little milk, then wander round a little and lie down, but does not seem to be comfortable, and does not fall asleep.

When this has been repeated several times, symptoms of more acute pain develop, and there is persistent rolling on to the back or over the body from one side to the other, with some groaning. Every now and again there is an endeavour to micturate, which is ineffectual, until the pain becomes so extreme that constant groaning and rolling is evidenced. Occasionally at this time the foal will rise, and when up, it goes round the box at a smart pace, almost a trot, and frequently also kicks out with the hind legs.

In cases of some standing the belly looks fuller than it should be, and in extreme cases palpitation reveals the presence of liquid in the abdomen. The temperature is normal, but the pulse is very frequent and full, even hard, and the breathing is blowing in character.

It is most frequently seen in colt foals, I have only seen one case in a filly foal.

To me it appears that it might be due to either of two causes, viz. :—

(1) A weakness of the bladder wall, which makes it incapable of expelling the contents.

(2) A gluing together of the walls of the urethra with mucus, which the contraction of the bladder is unable to overcome.

The case I had in the filly foal was undoubtedly due to weakness of the bladder, which disappeared in a few days, and gave no further trouble.

Treatment.—Small doses of spt. of Ether nit. are quite frequently given by the owner, before seeking advice, and quite often with happy results. The owner thinks it is due to the medicine stimulating the excretion of urine, which, according to his idea, is in abeyance. But, in my opinion, the extra quantity of urine excreted produces sufficient pressure in the bladder to overcome the obstruction in slight cases,

and recovery follows. In cases where it fails the extra pressure produced only aggravates the case.

The quickest way to give relief is catheterisation. In filly foals this is not difficult to accomplish and in the case I had it was done thrice daily for three days before micturition was normally performed.

For colt foals I don't know that a cathether is manufactured, at least I ordered a foal's catheter several years ago and the one I got would do for a colt nine months old or so, but is hopeless for a newborn foal. However, the whalebone stillet sent with it appeared to be about the proper thickness, and quite flexible, and a trial was made to introduce it into the bladder. It proved to be easy to accomplish, and in every case in which it has been used micturition took place shortly afterwards, with immediate and permanent relief from the pain, no further treatment being required. Perhaps some instrument maker may take the hint and produce a proper instrument.

General Articles.

THE NECESSITY FOR ABATTOIRS.*

By THOMAS PARKER, F.R.V.C.S.
Newcastle-on-Tyne.

(*a*) Meat Inspection.

In order that the inspection of carcases may be properly carried out, all slaughtering should be confined to one place, *i.e.*, centralised, and be permitted only during stated hours. In private establishments the slaughtering of animals takes place at all hours, and when it is remembered that within this city there are 106 separate slaughterhouses, it will be obvious that proper supervision is impossible, for, whilst inspectors are at work in one locality, animals are being slaughtered and the carcases removed from premises situated in others. The tramping of inspectors from one establishment to another examining a carcase here and there, although doing their best under the circumstances, does not constitute efficient inspection. Such a method leaves innumerable loopholes for the removal—through ignorance or otherwise—or even the concealment of diseased parts and organs. It is true that so far as this city is concerned there are slaughtermen who, whenever they detect an abnormality, promptly report the matter, so that arrangements may be made for the necessary inspection of the carcase concerned. It must be admitted, however, that to rely on the

* From a "Report on the Provision of Public Abattoirs for the City and Abattoirs and Market Scheme."

practice of having diseased or abnormal carcases detected by slaughtermen (whose knowledge is insufficient), and afterwards reported to the Authority by themselves or their employers, is not only placing a serious responsibility upon the wrong shoulders, but also exposing the consumer to grave risks.

And in support of the latter statement, one has to point out that, on several occasions, diseased organs and carcases have been found on premises within the city mixed up with healthy ones, and which were of such a nature—although dangerous to the consumer—that it would be absurd to expect laymen, including butchers and slaughtermen, to detect them. It is readily admitted that, under the present system, it is impossible to inspect more than a comparatively small percentage of the carcases of animals slaughtered within the city. And when one considers the fact that, during the past ten years, between two and three thousand carcases have been condemned as totally unfit for human consumption, of which more than a thousand were condemned for tuberculosis alone, no great stretch of imagination will be necessary to enable one to grasp the gravity of the subject. Finally, in order to demonstrate the facts that under the present slaughter-house system, whilst persons are exposed to the risk of infection, not only by eating but also by handling diseased meat, there remains the further risk of the spread of disease amongst animals, perhaps the following different types of cases, which have come within the experience of the Veterinary Inspector within the city, will suffice :—

1.—On entering a slaughter-house, two slaughtermen were found completing the dressing of a prime bullock. On examination it was found that the animal had been bled when at the point of death, suffering from anthrax. Both slaughtermen were literally covered with blood and, owing to the nature of the work, not only the floor but also the walls, utensils, etc., were in similar condition. When it is stated that, in such a case, a few drops of blood may contain millions of Anthrax Bacilli, and that disease may be contracted by inoculation through the merest scratch on the skin, the danger will be apparent. On the same premises healthy carcases were found. In this case it was necessary to promptly deal with not only the slaughtermen, including their clothing, but others who had previously handled the dying animal, besides animals having been in contact, carts, lairs, railway waggons, the slaughter-house concerned, and every conceivable thing likely to have been contaminated directly or indirectly, in order to avert disaster. Fortunately, the methods adopted to cope with the situation proved successful.

2.—On entering a butcher's shop, one and a half quarters of beef were found hanging close to the wall near other quarters. Being turned in the opposite direction usually found in shops, they aroused suspicion. On examination, it was found that they had been neatly dressed and certain parts removed, with the idea of concealing evidence of disease. Other diseased quarters, parts of which had already been disposed of, were found on a bench within the same shop. A search was then made. In a cellar beneath, two butchers were found busily engaged cutting meat into small pieces on a table. These pieces were also from the diseased quarters. At one end of the table was a mincing machine, through which part of the diseased pieces had already passed. Behind the table was a cupboard, which, on being searched, was found to contain diseased organs, besides huge masses of tuberculous growths, which had been stripped from the same carcase. The carcase in question was that of a cow, which had been slaughtered in a private slaughter-house and removed during the night. The whole lot was seized, taken before a magistrate, and afterwards destroyed. At the police court, the owner was fined the maximum penalty.

3.—On entering a slaughter-house, the carcase of a prime bullock was found which had just been dressed. The owner passed the following remark : " That's a fine bullock, Mr. Parker, isn't it ? " I replied, " Yes, if he's as good as he looks he is a real good one." On turning round, the lungs and other offal were observed suspended by crooks close to the wall. On manipulation, the lungs were found to contain tuberculous growths. In the meantime, the owner and the slaughterman continued to emphasise as to the fine quality of the carcase. Outwardly, the carcase presented no visible abnormality, excepting over a small area (about 2″ × 2″) in front of the shoulder from which—according to the slaughterman—the skin had been difficult to sever. On examining the carcase, it was found to be a highly dangerous case of tuberculosis, for, on cutting into several of the more important deep-seated glands, each gave vent to large quantities of tuberculous matter (pus). After completing the examination the whole lot was condemned, to the surprise of the owner and slaughterman alike. Apparently, the abnormal condition beneath the skin in front of the shoulder had not aroused their suspicion.

4.—A slaughter-house was visited in which were a number of carcases of pork recently dressed. One of these presented evidence that the animal had been suffering from swine fever,

and on examination of the internal organs lesions of the disease were detected. The carcase and organs were accordingly condemned and destroyed. It was found that the animal had been sent to the slaughter-house from a farm within the city. On visiting the farm premises, a large number of swine were found affected with the disease. In this case, we have an illustration of how meat inspection may be the means of not only prohibiting the sale of unfit food, but also of assisting in the control and prevention of the further spread of disease amongst farm animals.

TUBERCULOSIS.

Its prevalence.—Tuberculosis is generally recognised as being one of the most widespread of the diseases as affecting food animals. In the various herds of cattle, the percentage of animals found affected varies to some extent, but, as a rule, the percentage of animals affected in dairy herds is considerable, and in some instances very high, as the following example will illustrate.

Some months ago, a proprietor of a dairy farm decided to give up cow-keeping. There were sixteen cows and one bull. All of these were subjected to the tuberculin test. Of the whole, fifteen cows reacted to the test. Of the fifteen reactors, three were sent to the knacker's and destroyed.

The remaining twelve cows were, by arrangement, sent into the city to be slaughtered, subject to inspection. Although the twelve cows, before slaughter, appeared quite normal, on examining the carcases and organs after slaughter, every one of the twelve was found more or less affected with the disease.

Tuberculous meat and the risk of infection.—Not the least important of the dangers of tuberculous meat is that concerning the handling of it, and may be summed up as follows :—

When joints from extensively diseased carcases are sold by accident, or after having been purposely faked, they may be either contaminated with tuberculous matter which has been spilled over them and imperfectly removed, or they may include a gland or glands exposing or containing tuberculous material. Such meat may contaminate the hands of the housewife, the kitchen table, knives, plates, pantry shelves, or, if left in the pantry, may be overrun by flies passing to and fro between the meat and a loaf of bread, or a basin containing milk, thus contaminating the household, besides food materials ready for use, long before the meat reaches the oven.

Again, by experience, one is aware of the fact that not only healthy, but also tuberculous carcases and organs, whilst hanging in private

slaughter-houses, are commonly overrun by large rats. These rodents often cause serious damage to healthy carcases; but when they overrun and eat into tuberculous material and, having got their limbs, etc., well contaminated, pass on either to a healthy carcase within the same or adjoining slaughter-house, or to some other part of the district, the possibilities of spreading disease are by no means negligible.

It is hoped that these few observations will assist in demonstrating the necessity for complete supervision and inspection.

(*b*) Insanitary Conditions.

Owing to the scattered distribution of private slaughter-houses within the city, it is impossible to prevent the occurrence of nuisances from time to time, for certain of these premises are closely surrounded by private dwellings. In some of these places, while slaughtering is in full swing, there being insufficient accommodation for the live animals awaiting their turn, many are driven out into the alley-ways and allowed to wander about until the slaughtering process of the day is at an end. The animals are then driven into the slaughter-house and allowed to crowd together, urinating and defæcating within the small area. Ammonia and other gases and steam are liberated freely, and all this takes place—in many instances—immediately beneath the raw food material (carcases) hanging within the same building. It is not uncommon-to find butchers skinning and dressing carcases whilst live sheep and lambs, and sometimes calves, are crowding around them, simply because the animals have no other place to rest in the meantime. Such premises are—owing to the unavoidable over-crowding—invariably found in a filthy condition. The butcher, unfortunately, is working against difficulties during the process. Large quantities of blood are often wasted and much allowed to find its way into the sewers. Moreover, large quantities of blood and filth are not only trampled about the premises, but find their way on to the public thoroughfares. Furthermore, private slaughter-houses are commonly frequented by school-children—a most undesirable proceeding.

Another objectionable practice connected with many private slaughter-houses is that concerning gut-scraping, *e.g.*, when sheep intestines are allowed to steep in water too long and are then scraped; the liquid filth is emptied down the sewers and, particularly during summer months, the odours arising therefrom, even from those a considerable distance from the premises, are most repulsive. Skins scraped under these conditions are often rubbed up with coarse dry salt, and, although semi-putrid, are used for sausage-making.

Food prepared under such conditions, although masked by the methods adopted, is quite opposed to good sanitation. The great majority of the slaughter-houses within the city are such that, owing to

structural defects and arrangement, proper cleansing is impossible, and consequently they are absolutely unfitted for the purposes required.

Finally, there are other objections owing to the premises being situate in different parts of the city, namely :—

1.—The driving of animals weekly through the busy thoroughfares and residential districts to reach the slaughter-houses.

2.—The carting of refuse filth, hides, stomachs, etc., from these various premises through the streets.

3.—The storage of filth in refuse carts whilst awaiting removal.

4.—The undesirability of any of these practices, or the presence of such insanitary premises in densely populated districts.

5.—The accession of such nuisances, particularly during the summer months.

(*c*) Housing of Animals, Humane Slaughtering, and the Prevention of Cruelty.

Animals intended for slaughter for human food, on leaving farms or feeding centres, are invariably subjected to considerable journeys by road or rail, either before or after passing through marts or markets on their way to slaughter-houses. Whether fatigued or otherwise, the least that can be demanded on their behalf is that they shall be provided with comfortable quarters in which they may be rested, watered, and, if necessary, fed during the time elapsing between their arrival and the moment they are to be slaughtered. It is but fair to state that, in a great many private slaughter-houses, such conditions do not obtain.

A reform badly in need of being carried into effect is that appertaining to the whole process of slaughtering, up to and including the moment of actual killing. At the outset, one may state that that method which will secure the minimum amount of rough handling, immediately prior to and the cause of instantaneous unconsciousness at the commencement of the actual operation of killing, should hold precedence over all others.

Anyone who has had actual experience of the methods of procedure adopted in the great majority of private slaughter-houses, cannot but freely admit that a certain amount of suffering, which in some instances amounts to actual cruelty, takes place from time to time.

Notwithstanding these facts, however, it must not be assumed that butchers are cruel, or that it is their set desire to employ methods of slaughter that are other than humane ; but, nevertheless, there is a considerable amount of ignorance, and sometimes carelessness, displayed from time to time, amongst those engaged in slaughtering.

There are many who will argue that a good man will despatch his cattle always with the first blow, but no consideration is taken of the animals that have to serve as the novice's practising block. The

prohibition of the slaughtering of animals for food purposes, except in abattoirs in which the use of modern killing instruments is compulsory, is believed to be the only remedy by means of which undesirable methods may be totally excluded.

(*d*) HOME AND FOREIGN MEAT SUPPLIES.

An argument commonly advanced whenever the subject of abattoirs is discussed, and one which will not stand critical examination, is :—" That, as the sale of foreign meat is rapidly increasing in this country, the time is fast approaching when little or no home-killed meat will be required, and therefore slaughter-houses will be of no use."

Foreign Meat Imports.—It is true that the total imports of beef, mutton, pork, hams, bacon, etc., have increased from 10,610,394 cwt. in the year 1894, up to 23,081,895 cwt. in the year 1914. Notwithstanding this huge increase in the imports of dead meat into the United Kingdom during the past 20 years, it should be borne in mind that the rate of increase was greater during the first eight years than during the period since. And when it is remembered that the population of the United Kingdom has been increasing regularly for very many years at the rate of 400,000, or two-fifths of a million annually, it will be admitted that it is essential that better facilities should be offered by the erection of cold storage plant—within the city—not only to encourage overseas trade with our Dominions, but also to develop our port as a great distributing centre, besides enabling the wholesale frozen and chilled meat traders within this and outside districts to meet the ever-increasing demand.

Home-killed meat.—About 23 years ago, some half-a-million each of live cattle and sheep were imported annually into the United Kingdom. These imports have been gradually reduced, until the year 1914, when they ceased altogether. Nevertheless, it will be readily understood that the slaughtering of food animals has gradually increased during the past 30 years or so, when it is stated that the total meat supplies obtained from animals bred and fed within this country have gradually increased during the same period, *e.g.*—

The number of cattle within the United Kingdom has increased from 10,423,284 in the year 1884 up to 12,451,540 in the year 1916. In fact, for England and Wales alone, the total number of cattle returned in 1916 by the Board of Agriculture was the largest on record. Again, according to the recent statement by the President of the Board of Agriculture in reference to the Free Importation of Canadian Cattle, one is justified in anticipating that, so soon as circumstances permit, the number of fat and store cattle available for sale and slaughter at our markets and abbatoirs, respectively, will be further increased. Although the numbers of sheep within the United Kingdom have

fluctuated from time to time, they have quite recently shown signs of a great revival, for they have increased from 27,629,206 in the year 1913 to 28,849,655 in the year 1916. In England and Wales alone there were 428,546 more sheep in 1916 than in the year previous. And when it is remembered that Northumberland—in which there were 1,124,880 sheep in 1916, or an increase of about 25,000 over the year previous—is the largest sheep-breeding county in Great Britain, it may be fairly stated that this city is admirably situated for the supply of sheep, not only for abattoirs, but also for its live stock markets.

Pigs have, during recent years, shown a slight decrease, due, no doubt, to the difficulties experienced in breeding and feeding operations and movement on account of the prevalence of and mortality caused by swine fever. Other factors operating to the disadvantage of the industry may be said to include the rise in the cost of feeding, and the number of small holders giving up for military reasons. Notwithstanding these remarks, however, great hopes are entertained for the future, for, thanks to researches in the United States of America, and by the Veterinary Department of the Board of Agriculture in this country on the serum treatment, the ravages of swine fever promise to be so dealt with that the industry may prosper. The following table will suffice as an illustration in this direction :—

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RETURN OF OUTBREAKS OF SWINE FEVER FOR WEEK ENDING MAY 26TH, 1917. GREAT BRITAIN.

PERIOD.		SWINE FEVER.	
		Outbreaks Confirmed.	Swine Slaughtered as Diseased or exposed to Infection.
Week ended May 26th, 1917		75	27
Corresponding week in	1916 ..	123	356
	1915 ..	122	720
	1914 ..	117	954
Total for 21 weeks 1917		1,128	471
Corresponding period in	1916 ..	2,047	6,426
	1915 ..	1,719	7,667
	1914 ..	1,643	16,594

From the foregoing passages it will be gleaned that the future increases in the importation of frozen and chilled meat are never likely to interfere with the necessity for abattoirs and live stock markets. In fact, the future points to the urgency for the continued increase in both directions.

Again, when it is taken into account that, as already pointed out, not only is there a greater weight of meat produced annually from our home-bred herds, but a greater number of cattle bred each successive year within this country, the growing necessity for abattoirs and markets generally will be obvious.

Finally, when one also recalls the facts that within the city there are 23 slaughter-houses fewer to-day than 9 years ago, and that during last year (1916) no fewer than 25,365 cattle, 1,388 calves, 113,087 sheep, and 21,508 swine were slaughtered, the largest on record, it should be clearly evident that to-day there is, *not only within the country generally*, but within this city in particular, irrespective of future developments, a greater need for modern abattoirs than at any previous time.

(*e*) The Meat Industry, Agriculture, and Contagious Animal Diseases.

Where slaughtering is centralised, animals may be subjected to constant supervision and inspection prior to and at the time of slaughter, with the result that, in the event of the existence of some contagious malady, not only would the carcase, etc., of the animal be dealt with on the spot, but the detection of the condition would be the means of instituting inquiries into the source of the outbreak, so that steps could be promptly taken for the control and prevention of further spread of the disease concerned, to the immeasurable benefit of agriculture and the public generally.

In the absence of such supervision, an animal may be slaughtered whilst ill or at the point of death, and suffering from some highly dangerous condition, as, for example, anthrax. Irrespective of the dangers of such meat as an article of diet, persons handling it are exposed to grave risks of becoming infected by inoculation. But the risk of spreading the disease does not end here, for we have to take into account the disposal of blood (which may be carried to farms as manure), offal (which may be used for pig feeding or otherwise), hides, etc., besides the contamination of other meat on the premises. In properly arranged abattoirs, not only is there an equipped laboratory in which to examine, microscopically or otherwise, blood or other tissues in connection with diagnosis, but isolated buildings, such as a byre for suspects, post-mortem room and destructor, are also provided in which to deal finally with the carcase and organs of any such animal. Under the present

slaughter system, such preventive measures are impracticable. Again, there will be vividly within the recollection of butchers and others the enormous dislocation of certain traffic and the cattle trade within the district during 1914, and particularly 1912, on account of the existence of foot and mouth disease. Butchers were compelled to go out into the country districts to purchase their stock, slaughter them on the farms under most unfavourable conditions, and then cart the imperfectly set carcases to their shops at a financial loss directly to themselves, and indirectly to the community in general.

During a certain period immediately following each outbreak, the district concerned is generally mapped out into zones, extending from the centre of infection to a radius of several miles, for the purpose of restrictions regarding the isolation or movement of animals for slaughter or otherwise. In view of the possibility or, more correctly, the probability of our being visited periodically by outbreaks of foot and mouth disease, the establishment of abattoirs within the city would prove a boon—in such an event—to agriculturists and to meat traders in particular, for it would then be possible, in many cases, for animals to be moved by licence from the district concerned direct to the abattoir for immediate slaughter, rather than have to be held up indefinitely, to the disadvantage of meat traders and agriculturists alike.

(*f*) Meat Traders' Objections.

There are some butchers who, no doubt, would view with alarm and strongly oppose their being placed under proper supervision, besides giving up the privilege of using private premises in which to slaughter animals at any time during the day or night. As the majority of the butchers within the city slaughter cattle insurable against disease, *i.e.*, bullocks and heifers instead of cows, such an objection need not arise.

The stealing of offal, or the exchanging of carcases by unscrupulous employees, is another objection commonly raised by meat traders. In properly designed abattoirs, on completion of the process of dressing, each carcase may be run by over-head rails directly across the hall into cooling spaces opposite, each of which is separated by iron bars (about 2" apart), and in which, not only the carcases, but also the offal, may be secured by lock and key until removed by the owner. These spaces are let to individual master butchers and, although under proper security, the carcases are always under the surveillance of the authority concerned. In any case, the supervision and control of persons slaughtering or removing carcases is more possible in regulated abattoirs than under any other conditions.

The extent of the inconveniences caused by having to cart carcases from central abattoirs will depend upon the situation of the sale shops

within the district concerned. It naturally follows that, in this direction, some traders would be much more favourably situated than others. There are many traders who come from outside districts, and purchase freshly killed carcases from wholesale firms within the city without any apparent objection. Again, there are others who have their private slaughter-houses long distances from their sale shops, but of such inconveniences one never hears a word. So long as sale shops are situate in various parts of cities and towns, which will probably always be the case, so long will certain traders have to cart their meat some distance, far or near. To endeavour to obviate this difficulty in regard to many of the traders is an impossibility, and whenever local authorities allow themselves to be unduly hampered by the question, failure to meet the requirements of the majority and the public generally will be almost certain.

Another argument sometimes advanced by meat traders is " that to slaughter within abattoirs would be so costly that the price of meat would have to be raised." Fortunately for the public, such a statement has neither foundation in fact nor any particular bearing on the subject, *e.g.*—Within the city the private slaughter-houses are let at a weekly rental of from 8s. to 12s. 6d., exclusive of lighting, and the occupiers, in most cases, provide their own implements.

A business disposing of 3 cattle, 15 sheep, 1 calf, and 2 pigs weekly may be considered a good-class family business, and almost above the average. The cost for using the abattoir in which to slaughter these animals would be 10s. 1½d. In private slaughter-houses, the occupier has to cleanse and limewash the premises regularly, provide lighting, besides the upkeep of implements, etc. In an abattoir the user has neither upkeep nor light to provide, but has all the advantages of clean, wholesome and roomy premises in which to rest and slaughter his stock, and proper chambers in which his carcases may be stored whilst setting, so that he may be enabled to present them for sale under the most favourable conditions possible, from the point of view of market value.

Translations.

FRUIT AND VEGETABLES AND THEIR RELATION TO THE SPREAD OF INFECTIOUS DISEASES.

By V. K. Russ.

The more frequent occurrence of certain infectious diseases at distinct times of the year coincident with the use of these foods has been noticed. Dysentery is a summer disease, typhus is most frequent in the months of September and October and in the first half of November. On this account it has been considered that there is a possibility

of a connection between the frequency of the diseases and the use of fruit and vegetables at these periods. The possibilities of infection of these foods, by bacilli carriers, secretions and excretions, and intermediate carriers are numerous enough (liquid manure, transport receptacles, street dust, handling). It is on this account of interest to know how long pathogenic bacteria (typhus, paratyphus, bacilli, dysentery, cholera) can remain alive on fruit and vegetables. The tests were carried out partly with pure cultures, partly—corresponding to,the natural previous conditions—with human fœces containing the bacilli concerned. On apples, lemons, apricots and plums, the bacteria from pure cultures remained alive from 9 to 30 days and no marked differences were noticed in this respect in the different kinds of fruits. The paratyphus bacilli persisted the longest, then cholera vibriones, dysentery and the shortest typhus bacilli.

On strawberries and raspberries cholera, typhus, paratyphus, and diphtheria bacteria persisted a much shorter time, only up to 6 days.

Experiments with fœces gave similar results. The germs remained alive 4 to 18 days on fruit, the paratyphus bacilli persisting the longest, and the cholera vibriones showing the least life activity. On apples the typhus bacilli were present longer than on oranges and plums. Also the paratyphus bacilli remained alive on apples and pears longer than on plums and lemons.

In cold and darkness the germs lived longer than in light and summer temperature. Generally it appeared as if the bacteria remained alive a slightly shorter period in case of infection with fœces than with pure cultures. It appeared as if the saphrophytic bacteria in the fœces had an injurious effect on the pathogenic bacteria.

On radish and lettuce infected with pure cultures, the bacteria could be demonstrated for 4 to 38 days, in infection with fæces from 6 to 25 days. The transmission of infectious intestinal disease by raw fruit and vegetables is an important one from an epidemiological point of view. To avoid it the author recommends a hygienic declaration of these products. The sprinkling of vegetables with liquid manure shortly before gathering, the handling of wares by buyers, should be condemned. Washing and peeling of fruit lessens germ infection, but does not entirely remove it. Cholera vibriones on lettuce could be broken down by bathing it in vinegar three quarters of an hour before use. The consumption of fruit and vegetables from typhus infected regions is to be forbidden. To kill pathogenic bacteria on raw fruit the author recommends that it be dipped in boiling water for ½ to 1 minute before using. Taste and appearance do not suffer by this. Direct experiments on the efficacy of these procedures are in course of employment.—*Swiss Veterinary Journal.*—G. M.

ACORNS AND CHESTNUTS AS ANIMAL FOODS.

Horse-chestnuts are good for sheep; bovines eat them and they may be fed to horses; pigs refuse them and they are poisonous to poultry, ducks, and geese. Sheep will take 1 kilo. per day. cattle 2—3 kilos, preferably cooked, or the fresh or dried chestnuts may be mashed and mixed with the food. All animals can eat acorns, but it is advised not to exceed the following quantities.—

	Fresh Acorns.	Dried.
Horse of 1050 lbs. weight ..	About 8 lbs.	About 5lbs.
Cattle (fattening) 1260 to 1470lbs.	,, 12½lbs.	,, 6½lbs.
Milk cow 1050-1260lbs. ..	,, 8lbs.	,, 5lbs.
Hogs	2 to 2¼lbs.	1½ to 2lbs.

Four quarts of acorns are equivalent to 2 quarts of oats. The feed may be continued for a month and then dropped for a week and re-continued. Horses and cattle are fed the acorns raw, broken and freed from shells. For days the acorns are broken and coarsely ground and mixed with boiled potatoes, or, better, boiled with them.

Recueil de Med. Vet.

Abstracts.

SEAWEED AS FOOD FOR HORSES.

From a report by Mons. Adrian, of the French Ministry of War:—

The analysis of seaweed as compared with oats as shown by Mons. Balland is as follows,—

	Seaweed. Per cent.	*Oats.* Per cent.
Water	14.40	12.55
Hydrocarbons	52.90	68.80
Nitrogen	17.30	9.10
Cellulose	11.50	8.45
Mineral matter	3.90	3.10

It will be seen that the seaweed from which the salt has been extracted contains less hydrocarbonated matter but a much higher percentage of nitrogen, making it a very nutritious product if digestible and assimilated.

In June 1917 some horses belonging to M. Verdier-Dufour, of Aubervilliers, were in a bad state from lymphangitis. There were 6 horses. Three had ordinary diet of oats, hay and straw and three were fed on alimentary seaweed. They were kept at work. For the first eight days alimentary seaweeds were substituted for oats at a rate of 0.35 kilo for 0.45 of oats. During the rest of the experiment, which lasted 24 days, seaweed was substituted entirely for oats. On the 24th

day the horses fed on seaweed were found to have increased 6 per cent. in weight and their general condition had improved and the lymphangitis had disappeared. In the other 3 animals fed on ordinary diet the lymphangitis did not improve. The animals had accepted, digested, and assimilated the new food in place of oats.

Experiments were made on 20 horses of the First Cuirassiers, which were divided into 2 lots and one lot placed on normal diet, and the other given one kilo. of alimentary seaweed in place of the kilo. of oats. The experiments were under the supervision of Mons. Jacoulet and Mons. Fray; they lasted two months, and it was found that on weighing the horses those fed on seaweed had gained individually 13 kilos. in 2 months whilst the others had scarcely gained 2 kilos.

Seaweed grows abundantly on the coast of Brittany. It is considered that 0.75 kilo. of alimentary seaweed is equal to 1 kilo. of oats but this point requires further elucidation. As a substitute for oats there should be a great future before seaweed. France imports 2,000,000 quintals of oats yearly, representing a sum of 35,000,000 francs. If the sea can supply a supplementary crop to the home fields, much money sent out of the country for oats will remain at home.

19 OCT 1918

ANTHRAX AND ITS PREVENTION.*

ANTHRAX is an acute, infective disease of man and animals and is caused by the anthrax bacillus, which becomes disseminated throughout the body so that every part is infectious. The many animal products used in commerce may thus be a grave source of danger if they emanate from animals which have succumbed to the disease. Although in this country anthrax is not to be regarded as a frequent cause of death, it is nevertheless of great importance on account of the increase which has taken place, and especially in virtue of the very large amount of material imported from countries where anthrax is rife. In order to prevent the disease in dangerous trades working with possibly infected animal material it would, at first sight, appear to be a simple thing to disinfect the infected material. In practice, however, this is found to be exceedingly difficult on account of the truly enormous powers of resistance of the spore of the anthrax bacillus, which is among the most remarkable of living things. A method to be efficient and practicable (1) must aim at the complete destruction of the infectivity of the material; (2) must not damage the material;

* Report of the Departmental Committee Appointed to Inquire as to the Precautions for Preventing Danger of Infection by Anthrax in the Manipulation of Wool, Goat Hair, and Camel Hair. Vol. 1., Report of the Disinfection Sub-Committee. (London: Published by His Majesty's Stationery Office, 1918.) Price 1s. net. .

(3) must be practicable on a large commercial scale; and (4) its cost must be reasonable.

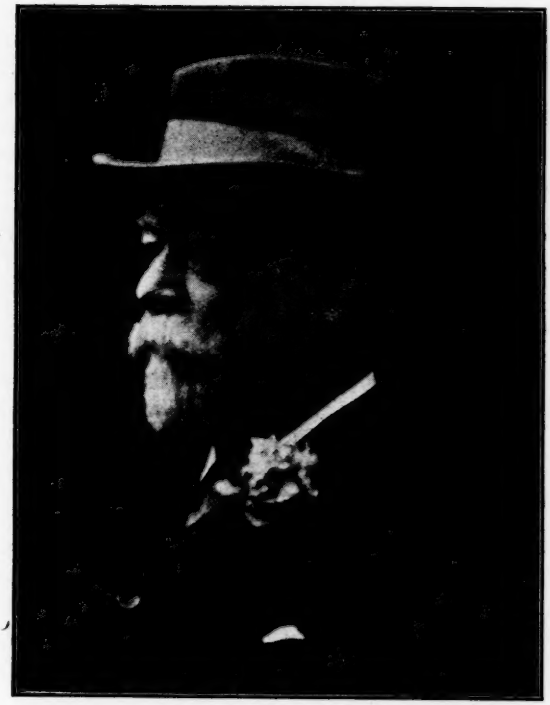
Hitherto all methods have failed in one or other of these essentials. The report before us, however, contains a large body of accurate experimental evidence which goes to show that complete success can now be attained without risk to the workers and without damage to the material disinfected. The main feature of the process is a preliminary treatment in which material is submitted to the action of a warm solution of soap and water containing alkali, followed by squeezing through rollers. This causes softening and disintegration of any infected blood-clots, and the spores are laid bare for the subsequent destroying process, which is carried out by a warm solution of formic aldehyde. The material, after being again squeezed through rollers, is then dried and kept for a short time as an extra safeguard. According to the testimony of practical people the hair and wool are not injured by the process, and it is computed that ten million pounds of infected wool can be effectively disinfected for something less than 0·824 penny per pound weight.

The report is a brilliant instance of how preventive measures in medicine must be based on scientific inquiries, and it is not too much to expect that "wool-sorter's disease" may soon disappear from the list of the fatal maladies of man.—*Nature.*

Obituary.

MR. F. H. GIBBINGS, F.R.C.V.S.

THE death of Mr. Frank Henson Gibbings, of the Black Boy Hotel, took place at the hotel on Saturday last. Mr. Gibbings, who was in his 64th year, had been ill for about twelve months. A native of Devonshire, and originally in practice as a veterinary surgeon at Bideford, he came to Nottingham some thirty years ago as partner with the late Mr. Greswell, whose practice was at that time on Park-row. Some years later he joined the late Mr. Turner in partnership at the Black Boy Hotel in succession to the late Mr. Mitchell, and thenceforward resided at the hotel. He took his diploma in London in 1878. He was a Fellow of the Royal College of Veterinary Surgeons and carried on a large and successful practice. He enjoyed the confidence and esteem of a large circle of friends both in his profession and as proprietor of the hotel. He was a Royal Arch Mason and at one time took a keen and active interest in the craft. A member of the Black Boy Birthday Society, he was for many years its treasurer, having also previously passed the Presidential chair, and until his illness made it impossible, he attended the weekly meetings of the Society and took an interest in all that concerned it. The funeral was on Tuesday,



THE LATE F. H. GIBBINGS, F.R.C.V.S.
NOTTINGHAM.

when, prior to the body being removed to Leicester for cremation, there was a service at St. Mary's, conducted by the Rev. Canon Field, Vicar. The chief mourners were Mr. W. P. Gibbings, of Carlisle, and Mr. A. Gibbings, of Southampton (brothers), and Miss Ward. Among others present were Mr. J. W. Danby, Mr. Guy Preston, Mr. H. S. Ryde and Mr. H. B. Hoe; Mr. Arthur Barlow, Mr. Parker Woodward, Mr. Tom Turner, Mr. C. Taylor, Mr. Pinder, etc. Although there was a request that no flowers should be sent, in addition to one from the family there was a beautiful wreath from the Black Boy Birthday Society, one from Brunt's Charity, one from Miss Mills (Lincoln), and one from the staff at the hotel.

DR. CLEMENT STEPHENSON.

DR. CLEMENT STEPHENSON, whose death occurred recently at Sandyford Villa, Newcastle, was well-known throughout the country, says the *Newcastle Daily Journal*, as a veterinary surgeon, and even

further afield as a breeder and exhibitor of Aberdeen-Angus cattle. He was associated with veterinary surgery from childhood, and won much distinction in connection therewith. At the close of his school days he joined his father, who also practised in the city, and, having learnt the rudiments of the profession, went to the Royal Veterinary College, where he obtained his diploma. The high opinion which the authorities of the College held concerning him is indicated by the fact that he was offered the post of Demonstrator and Junior Lecturer in Anatomy. He came north, however, and rejoined his father in the Scotch Arms Yard, the business being afterwards transferred to Newgate Street.

Dr. Stephenson was appointed Veterinary Inspector under the Newcastle Corporation in 1869, and soon afterwards secured a similar appointment for Northumberland. There was no more familiar figure in the city cattle market, where he was to be found in the exercise of his duties every Tuesday. He took a very active and prominent part indeed in stamping out rinderpest, contagious pleuropneumonia, and foot and mouth disease. Another appointment he held was that of consulting veterinary surgeon to the North-Eastern Railway Company, and in his earlier days he was also veterinary surgeon to the Northumberland Hussars. Several times Dr. Stephenson was called upon to give evidence before Royal Commissions and Parliamentary Committees, notably on the subject of tuberculosis in cattle. He was one of the first Fellows elected under the charter which was obtained for the Royal College of Veterinary Surgeons in 1881.

With the University of Durham the deceased gentleman had a long connection. He took a leading part in establishing the Chair of Comparative Pathology and Bacteriology, and was a member of the Council of the College of Medicine. In June, 1908, the University recognised his services by conferring upon him the honorary degree of Doctor of Science. In 1912 Dr. Stephenson offered the Council of Armstrong College, Newcastle, £5,000 towards the buildings for an agricultural department for advisory work. The gift was gratefully accepted, and the Council decided that Dr. Stephenson's name should be attached in some manner to the new department.

Pioneer Cattle Breeder.

He was the pioneer among " black-skin " breeders in the North of England. For many consecutive years his animals were amongst the champion and first prize-winners at all the most important summer shows, and his phenomenal successes did much to establish other herds of Aberdeen-Angus Cattle in Northumberland and Durham.

Careful handling, any amount of fresh air, and good plain food, along with, of course, special attention to purity of blood, soundness of

constitution, and breed type were the lines upon which Dr. Stephenson travelled to win his many successes. The result was an excellent stock. Dr. Stephenson virtually retired from showing several years ago, but he sent representatives to the Royal Show in Newcastle in 1908, with highly successful results.

Apart from the summer shows of breeding stock, the Balliol College herd won golden laurels for their enthusiastic owner at the great fat stock shows. Competing against all breeds and all ages, champion honours were secured by members of Dr. Stephenson's herd at the fat stock shows at York in 1881, at Leeds in 1883, at Norwich in 1881, 1883, and 1893, at Birmingham in 1883, 1884, 1885, 1887, 1893, and 1894, and at Smithfield in 1885, 1887, and 1894. In addition to this record, other exhibits from the herd have been six times reserve for the championship.

In 1878, one which he had picked up as a young one gained for him his first prize at Smithfield as a two-year-old heifer. At that time there were only three pedigree herds in England, whereas now they are spread all over the country, and also in Ireland. Dr. Stephenson firmly held the impression that Aberdeen-Angus were the best cattle with which to meet foreign competition, more particularly on the ground that they mature early.

A NEW ORDER IN ITALY REGARDING HORSES, MULES, OR DONKEYS SENT TO THE ABATTOIRS.

THE order respecting butchery of the equine races came out recently in the *Italian Official Gazette.* It forbids the butchery of all horses, asses, mules and pack ponies which are at all fit for breeding or work. The order is the result of the necessity which has arisen to protect reproduction, which has become seriously menaced by the slaughter which is carried out regardless of sex, age or condition, and also by the necessity for saving all animals capable of work. All animals sent to the Abattoir have to be certified by a Veterinary Inspector as useless either for work or for breeding purposes.

CORRECTION.

In our review of " Veterinary Post Mortem Technique," by W. J. Crocker, B.S.A., V.M.D., page 272, July number, we commented on a supposed omission by the author of the dimensions and weight of normal organs in dead animals. We now find that these are fully given in tabular form (small print) in the book. This being so, the volume is all that can be desired. We are sorry for the oversight which occurred through not finding " size and weight " of normal organs in the index. The price of the book is 18s. net.

Reviews.

ANNUAL REPORT ON THE CIVIL VETERINARY DEPARTMENT FOR THE YEAR ENDING 31ST MARCH, 1917.—22pp. 14 tables, 1917. Price 9d. Allahabad. Printed by Superintendent Government Press (sent by Mr. S. G. M. Hickey, the Superintendent).

This is an interesting report of official and veterinary work in India.

Veterinary hospitals and dispensaries are doing good work, and measures are being gradually advanced for improvement in the breeds of horses and cattle. The Hon. A. W. Pim calls attention in his note to the importance of horse-breeding operations, the war having increased the need for horses and cut off external sources of supply.

Severe outbreaks of contagious disease among horses and cattle and depletion of the staff have caused the year's work to be beset with great difficulties. Three times as many protective inoculations and vaccinations have however been carried out.

Among equine diseases, glanders, surra, tetanus and strangles, came under the control of the C.V.D. in four horse-breeding districts. Surra caused the loss of 118 animals, and 8 cases of strangles out of a total of 599 proved fatal.

Rinderpest was responsible for 7,563 deaths in cattle, the figure being just about double of that recorded in the previous year. Hæmorrhagic septicaemia, foot and mouth disease and anthrax, caused a total of over 4,000 deaths and blackquarter killed 700 subjects.

During the past year the veterinary assistants visited 15,010 villages and treated 28,320 animals for diseases other than those specially reported on. They castrated 312 animals and attended 33,431 cases outside those treated in hospitals and dispensaries—56,619 protective inoculations and vaccinations were carried out. These figures will give some idea of the vast amount of work done. All credit is due to Messrs. S. G. M. Hickey, E. W. Oliver and C. W. Wilson, under whose direction and guidance and by whose exertions a very great proportion of the work has been carried out. G. M.

NOTICES.

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